

What is claimed is:

Sub
a1
1. A head-mounted image display apparatus comprising:
an image display element;

a projection optical system that projects an image displayed
5 by said image display element;

a screen onto which the image is projected by said projec-
tion optical system; and

a combiner disposed between said projection optical system
and said screen,

10 wherein said combiner transmits image light from said
projection optical system and directs it to said screen, and
reflects the image light reflected at the screen.

2. A head-mounted image display apparatus as claimed in
15 claim 1,

wherein said combiner further transmits external light.

3. A head-mounted image display apparatus as claimed in
claim 1,

20 wherein said screen is disposed above or below a user's
pupil.

4. A head-mounted image display apparatus as claimed in
claim 1, further comprising an eyepiece optical system disposed
25 between said combiner and the user,

wherein said eyepiece optical system enlarges the image
projected onto said screen.

5. A head-mounted image display apparatus as claimed in claim 4, further comprising an optical element disposed on an external side of said combiner with respect to said eyepiece optical system.

6. A head-mounted image display apparatus as claimed in claim 5,

wherein a composite optical power of said eyepiece optical system and said optical element is substantially zero.

7. A head-mounted image display apparatus as claimed in claim 1,

wherein said image display apparatus has a plurality of units each including said image display element and said projection optical system.

8. A head-mounted image display apparatus as claimed in claim 7,

wherein said units form images corresponding to the user's left and right pupils.

9. A head-mounted image display apparatus as claimed in claim 1,

wherein said screen has a retroreflection characteristic.

10. A head-mounted image display apparatus as claimed in claim 1,

wherein said combiner is a half mirror or a polarization

separation member.

Sub a2 11. A head-mounted image display apparatus comprising:

an image display element;

5 a projection optical system that projects an image displayed by said image display element;

a screen onto which the image is projected by said projection optical system; and

10 a combiner that reflects image light reflected at said screen, and transmits external light.

09615533-071300 Sub B1 12. A head-mounted image display apparatus as claimed in claim 11,

15 wherein said combiner further transmits image light from said projection optical system and directs it to said screen.

add a3